

7.0 SEDIMENTS CHALLENGE

Under the Great Lakes Binational Toxics Strategy, EC and US EPA committed to:

“Complete or be well-advanced in remediation of priority sites with contaminated bottom sediments in the Great Lakes Basin by 2006.”

Highlights of sediment remediation activities undertaken in the U.S. and Canada are described below.

2002 Sediment Assessments with US EPA’s Research Vessel *Mudpuppy*

Contaminated sediments are a significant concern in the Great Lakes Basin. Although toxic discharges have been reduced over the past 30 years, high concentrations of contaminants still remain in the sediments of many rivers and harbors. These sediments are of potential risk to the health of aquatic organisms, wildlife, and humans.

To assist in determining the nature and extent of sediment contamination at these polluted sites, US EPA’s Great Lakes National Program Office (GLNPO) provides the Research Vessel (*R/V Mudpuppy*). The *R/V Mudpuppy* is a 32-foot-long, flat-bottom boat that is specifically designed for sampling sediment deposits in shallow rivers and harbors. The boat is able to sample at water depths between 2 feet and 50 feet. Using a vibro-coring unit, the *R/V Mudpuppy* can take sediment core samples of up to 15 feet in depth.

To adequately characterize a site, GLNPO uses an integrated sediment assessment approach. This involves collecting data for sediment chemistry, toxicity, and the benthic community at a specific site, and then using the results to determine the extent of contamination that could be impacting the aquatic ecosystem.

Since 1993, the *R/V Mudpuppy* has conducted surveys at 38 locations, including 27 of the 31 Great Lakes Areas of Concern (AOCs). So far in 2002, the following surveys have been conducted with the assistance of the *R/V Mudpuppy*:

- Cuyahoga River, OH - Screening level assessment of old river channel as part of a GLNPO grant with the Ohio Environmental Protection Agency;
- Rochester Embayment, NY - Assessment of AOC, including the Genesee River, as part of a GLNPO grant/interagency agreement with New York State Department of Environmental Conservation and U.S. Fish and Wildlife Service;
- Lake St. Clair, MI - Collected samples to determine if the release of high levels of PCBs in the 10-mile drain area in St. Clair, Michigan, had extended out into Lake St. Clair;
- Lake Macatawa, MI - Screening level assessment conducted as part of a GLNPO grant to Grand Valley State University;
- Duluth Harbor, MN - Assisting the U.S. Corps of Engineers with sampling for navigational dredging purposes; and
- Milwaukee Harbor, WI - Assisting the U.S. Corps of Engineers with sampling for navigational dredging purposes.

U.S. Great Lakes Sediment Remediation Projects - 2001⁶

During 2001, nearly 400,000 cubic yards of sediment were remediated from five U.S. sites in the Great Lakes Basin. Several of these projects are in various phases of remediation, with work continuing, while the Hayton Area Remediation Project (HARP) project, Fields Brook site, and the Reynolds Metals/Alcoa site began work for the first time in 2001. The following is a description of each remediation project:

HARP OU1-Source Abatement: In 2001, Tecumseh Products Company, in partnership with the Wisconsin Department of Natural Resources (WDNR) and GLNPO, completed the removal of approximately 11,800 cubic yards of contaminated sediments from Operable Unit (OU)-1 of the HARP project area. This site is located in New Holstein, Wisconsin, within the Manitowoc River watershed. The project was partially funded through a \$250,000 GLNPO grant to WDNR. The company is currently pursuing additional remedial actions at downstream Operational Units (OU-2 through OU-4), while seeking official closure documentation from the regulatory agencies for the completed work.

Fields Brook Superfund Site: This project, led by US EPA Superfund, removed approximately 42,000 cubic yards of sediments contaminated with PCBs, HCB, and radium from the Fields Brook and adjacent floodplains. Fields Brook is a tributary of the Ashtabula River in Ohio. The remaining sediment to be removed in 2002 has been impacted by Dense Non-Aqueous Phased Liquid (DNAPL).

Reynolds Metals/Alcoa East: US EPA Superfund was involved in the remediation of roughly 86,000 cubic yards of PCB-contaminated sediment in this 33-acre site along the St. Lawrence River in Massena, New York. Over 4,000 cubic yards of PCB-impacted sediment with levels greater than 10 part per million were capped.

Saginaw River and Bay: US EPA Superfund completed this project on the Saginaw River and Saginaw Bay in Michigan in July 2001. Over 137,000 cubic yards of sediment were removed from this area in 2001, eliminating approximately 4,500 pounds of PCBs.

Pine River: During the third year of progress on the Pine River, in Michigan, approximately 120,000 cubic yards of contaminated sediment were removed by US EPA Superfund. This remedial action eliminated roughly 50,300 pounds of DDT from the river.

Figure 7-1 presents the cumulative volume of sediment remediated in the U.S. since 1997.

⁶ Sediment remediation data for 2001 are presented because data lag a year behind in reporting (e.g., 2002 data will become available in 2003).

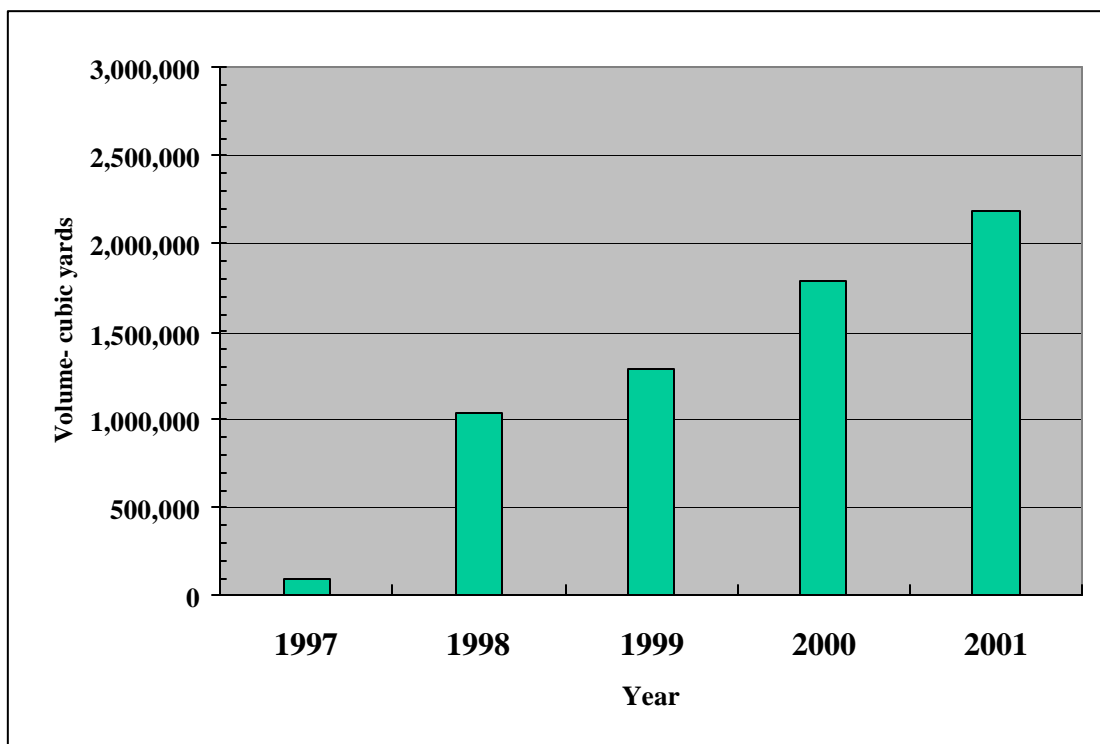


Figure 7-1. Cumulative Volume of Sediment Remediated in the U.S. Since 1997

Update on Sediment Issues in Areas of Concern (Canada)

The following information identifies some of the sediment assessment and remediation related activity carried out in Canadian Areas of Concern (AOCs) during 2001. The previous GLBTS progress reports of 2000 and 2001 should be referred to for additional information on sediment issues in the Canadian AOCs.

Port Hope Harbour: Sediments in the harbour are, in part, contaminated by uranium-series radionuclides, and remediation is linked to the development of facilities in the Port Hope area for the long-term management of low-level radioactive waste. An agreement between the federal government and the Town of Port Hope and adjacent municipalities was reached in March 2001 on the development of these facilities, and environmental planning and assessment activities have been initiated under the requirements of the Canadian Environmental Assessment Act.

Thunder Bay Harbour (Northern Wood Preservers): Approximately 11,000 cubic metres of contaminated sediment (above 150 ppm PAH) had been dredged at this site and placed in an engineered bioremediation cell on site. Remediation criteria were not being met over the period September 1998 - February 2000, and the decision was made to utilize an alternate technology. In 2001, the sediments were shipped by environmental rail cars to Princeton, British Columbia, for thermal desorption. Full treatment is expected to be completed by August 2002.

Severn Sound: The Severn Sound AOC is principally an area impacted by excessive nutrient enrichment and eutrophication. Remedial activities have focused on sewage treatment plant upgrades, improvements in private sewage systems, urban stormwater management and stream and shoreline habitat rehabilitation. Various assessments and monitoring of sediments have been undertaken, and in 2001, it was concluded that impairments relating to degradation of benthos and restrictions on dredging have been overcome. No sediment interventions are planned, and residual sediment contamination will be left to natural recovery.

Table 7-1 reports progress on sediment remediation projects at both Areas of Concern and non-Areas of Concern in the U.S. and Canada, from 1997 through 2001. The maps on the following pages illustrate the progress and achievements made in sediment remediation activities in the Great Lakes from 1997 to 2001.

Table 7-1. Progress on Sediment Remediation in the Great Lakes Since 1997*

Site/AOC/non-AOC	Cumulative Mass of Contaminant Removed (kg)												Cumulative Volume Sediments Removed 1997 to 2001 (cy)	Volume Sediments Removed 2001 (cy)	Ultimate Disposition
	aldrin/ dieldrin	benzo(a) pyrene	chlordane	DDT (+DDE/DDD)	hexachlorobenzene	alkyl-lead	mercury & compounds	mirex	octachloro styrene	PCBs	dioxins and furans	toxaphene			
U.S. Sites															
Ashtabula River, OH															
Black River-S. Branch, MI															
Black River, OH															
Buffalo River, NY - Buffalo Color - Area D													45,000		capped
Clinton River, MI															
Cuyahoga River, OH															
Deer Lake-Carp River, MI															
Detroit River, MI - Monguagon Creek													25,000		landfilled
Eighteen Mile Creek, NY															
Fields Brook Superfund, OH													42,000	42,000	landfilled
Fox River, Green Bay, WI - Deposit 56/57 - Deposit N										22,865 22,815 50			87,500 80,300 7,200		landfilled
Grand Calumet, IN															
Kalamazoo River, MI - Bryant Mill Pond										10,000			150,000		landfilled
Manistee Lake, MI															
Manistique River, MI													123,000		landfilled
Manitowoc River, WI - HARP										425			11,800	11,800	landfilled

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U.S. Sites															
Maumee River, OH - Fraleigh Creek										25,400			8,000		landfilled
Menominee River, MI/WI - Ansul Eighth Street Slip													13,000		landfilled
Milwaukee Harbor, WI - North Ave. Dam													8,000		landfilled
Muskegon Lake, MI															
National Gypsum - Alpena, MI															
Niagara River, NY - Scajaquada Creek - Cherry Farm/River Road - Niagara Transformer													71,000 17,500 42,000 11,500		landfilled
Pine River, MI				226,569									260,000	120,000	landfilled
Presque Isle Bay, PA															
River Raisin, MI										16,795			27,000		on-site TSCA facility
Rochester Embayment, NY															
Rouge River, MI - Evan's Product Ditch - Newburgh Lake										250,000 4,000 246,000			407,000 7,000 400,000		off-site TSCA facility and landfilled
Saginaw River/Bay, MI										4,500			342,500	137,500	off-shore CDF
Sheboygan Harbor, WI															
St. Clair River, MI															
St. Lawrence River, NY - Reynolds Metals/Alcoa										10,000			86,000	86,000	landfilled and

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U.S. Sites															
East															capped
St. Louis River/Bay, MN/WI															
St. Marys River, MI													3,000		landfilled
Torch Lake, MI															
USX Vessel Slip Project, IN													3,200		solid, special and hazardous waste landfilled
Waukegan Harbor, IL															
Waxdale Creek, WI															
White Lake, MI															
Willow Run Creek, MI										200,000			450,000		on-site TSCA facility
Wolf Creek - Tributary, MI															
TOTALS		226,569				539,985				2,191,800		397,300			

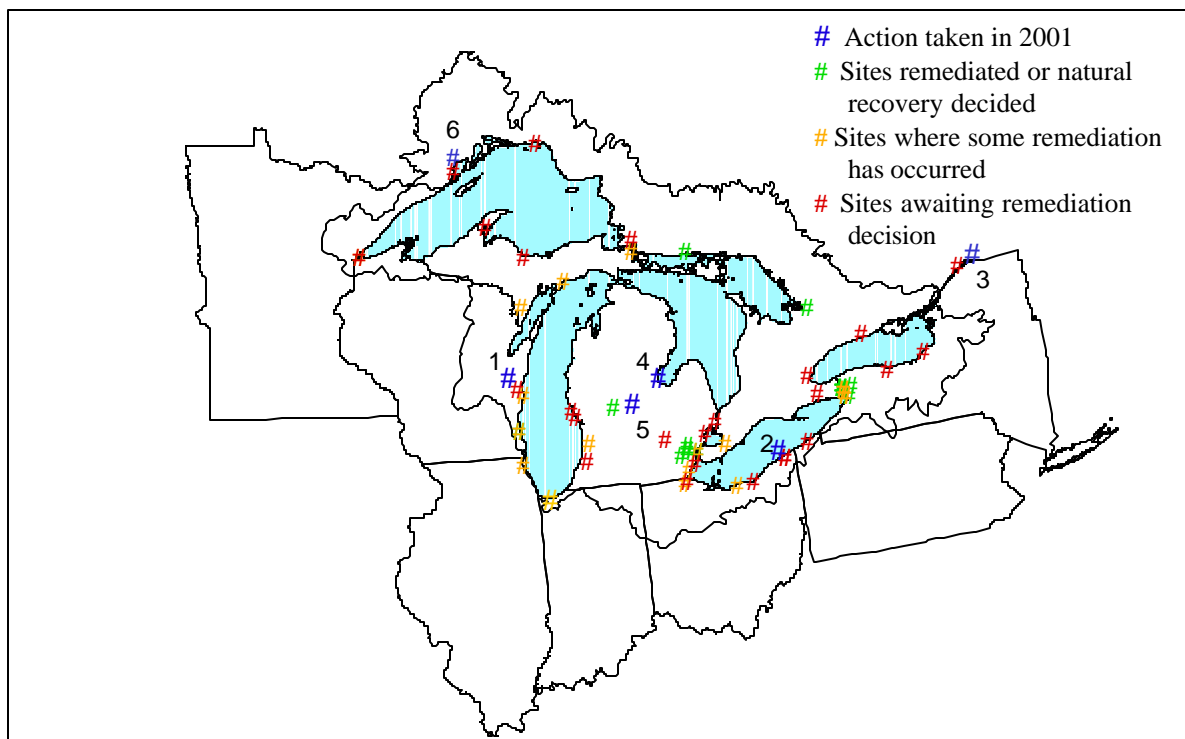
*Information included in matrix reports quantitative as reported by project managers. No attempt has been made to evaluate chemical data quality or verify calculations of mass removed.

Table 7-1. Progress on Sediment Remediation in the Great Lakes Since 1997*

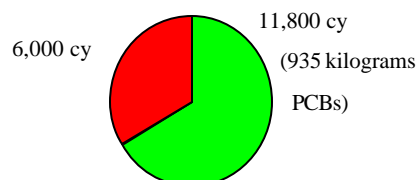
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	aldrin/ dieldrin	benzo(a) pyrene	chlordane	DDT (+DDE/DDD)	hexachlorobenzene	alkyl-lead	mercury & compounds	mirex	octachloro styrene	PCBs	dioxins and furans				toxaphene
Canadian Sites															
Thunder Bay - Northern Wood Preservers		2,700											11,000 21,000	11,000	Thermal treatment Berm enclosed & capped
Nipigon Bay															
Jackfish Bay															
Peninsula Harbour															
St. Marys River															
Spanish River															
Severn Sound															
St. Clair River															
Detroit River															
Wheatley Harbour															
Niagara River (Ontario)															
Hamilton Harbour															
Metro Toronto															
Port Hope															
Bay of Quinte															
St. Lawrence River (Cornwall, Ontario)															
TOTALS		2,700											32,000		

*Information included in matrix reports quantitative as reported by project managers. No attempt has been made to evaluate chemical data quality or verify calculations of mass removed.

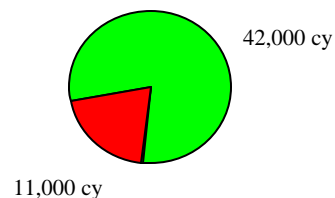
Great Lakes Sediment Remediations in 2001



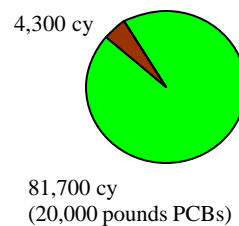
1. Hayton Area Remediation Project - OU1 – Source Abatement, Wisconsin



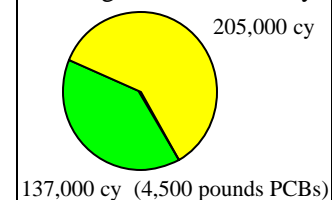
2. Fields Brook Superfund Site, Ohio



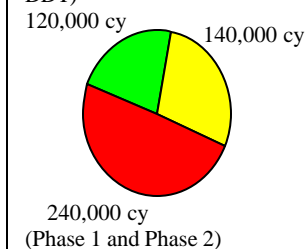
3. Reynolds Metals/Alcoa East St. Lawrence River



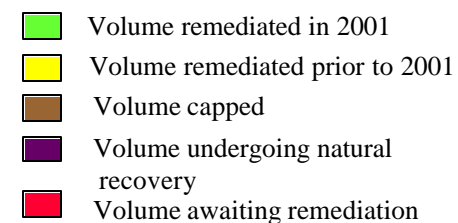
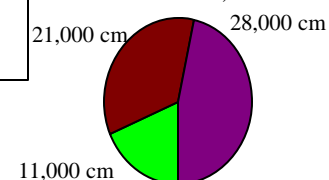
4. Saginaw River & Bay



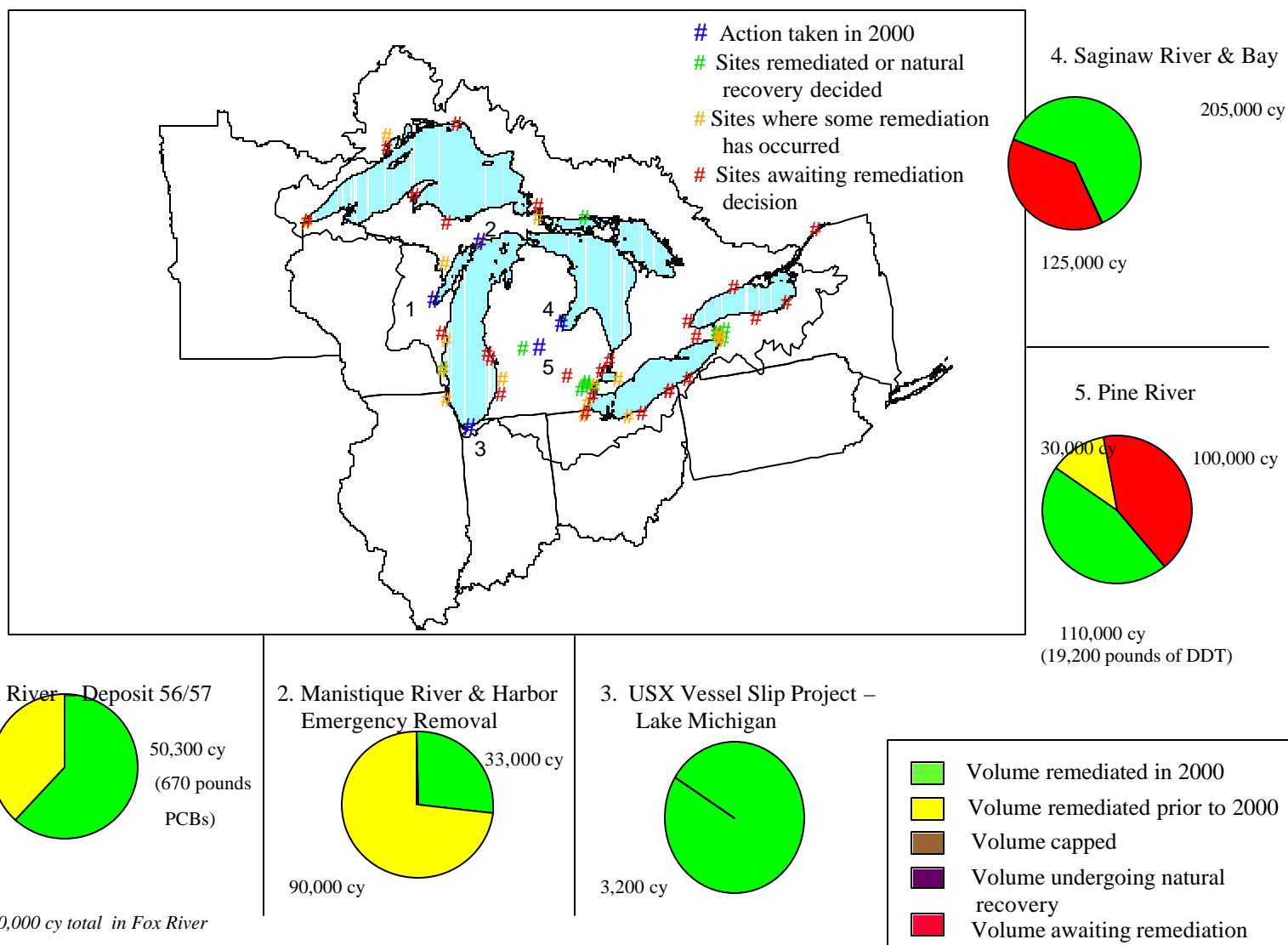
5. Pine River, Michigan
(50,300 pounds DDT)



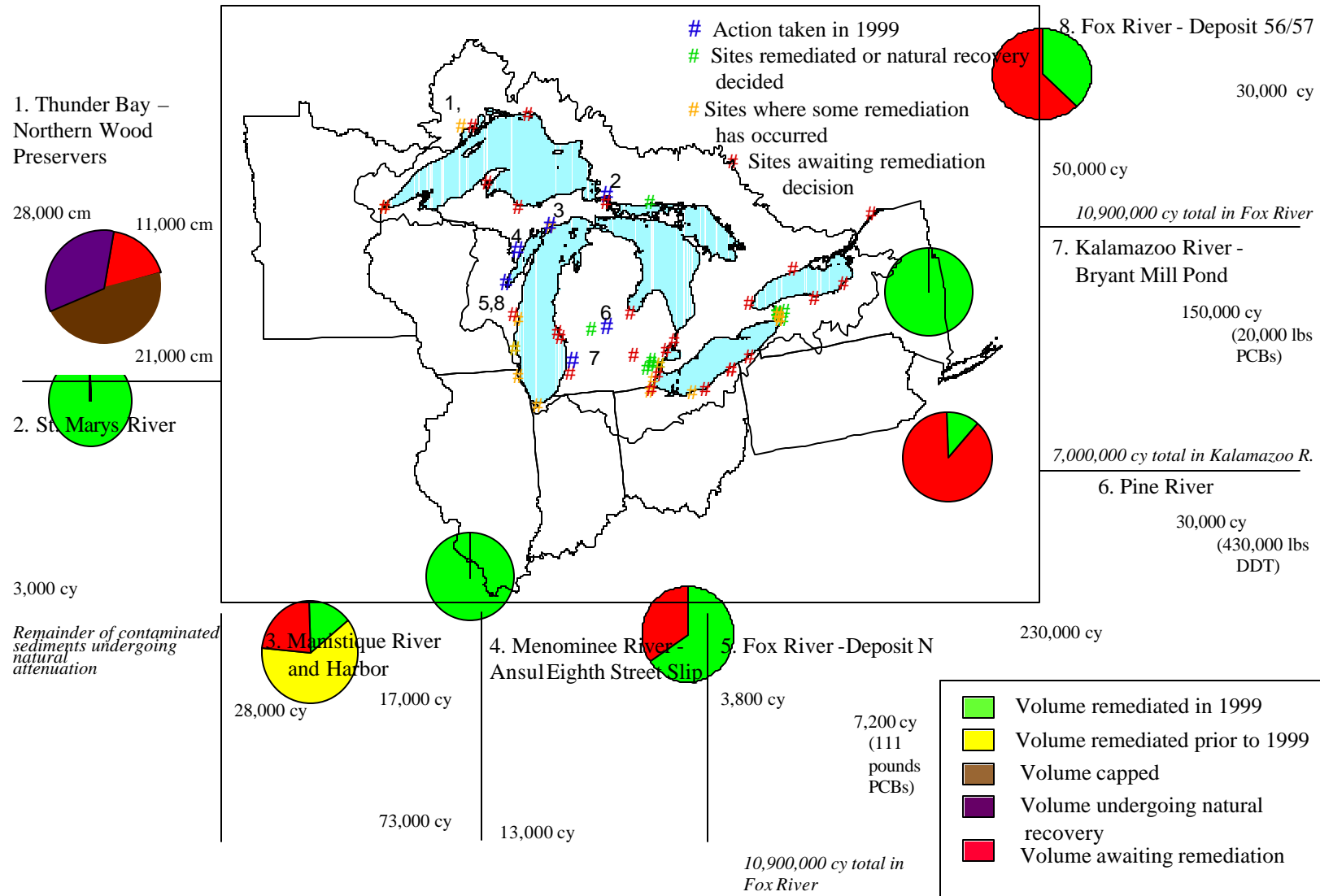
6. Thunder Bay – Northern Wood Preservers, Ontario



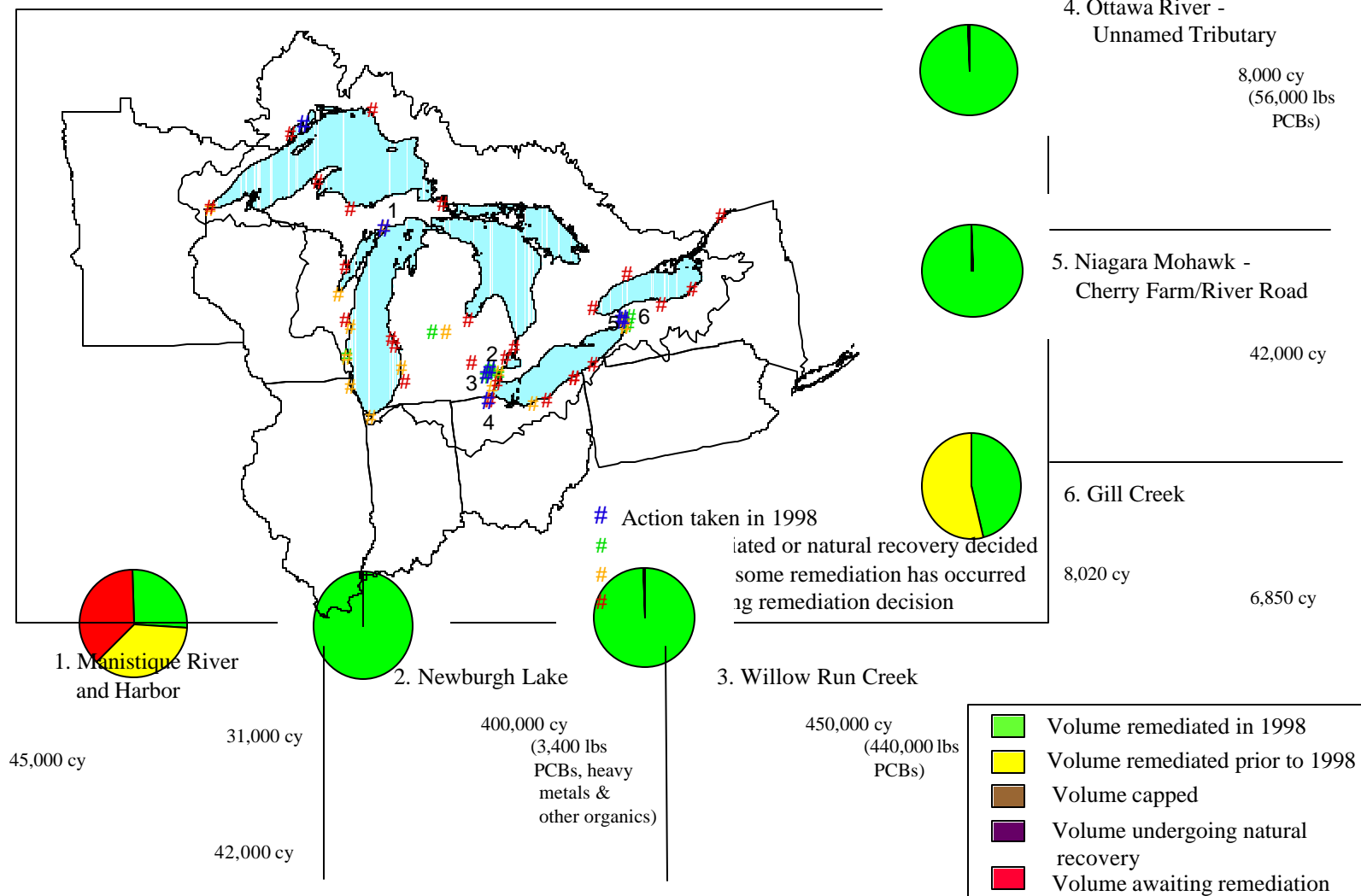
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